Species of Concern
NOAA National Marine Fisheries Service

Pink abalone
Haliotis corrugata

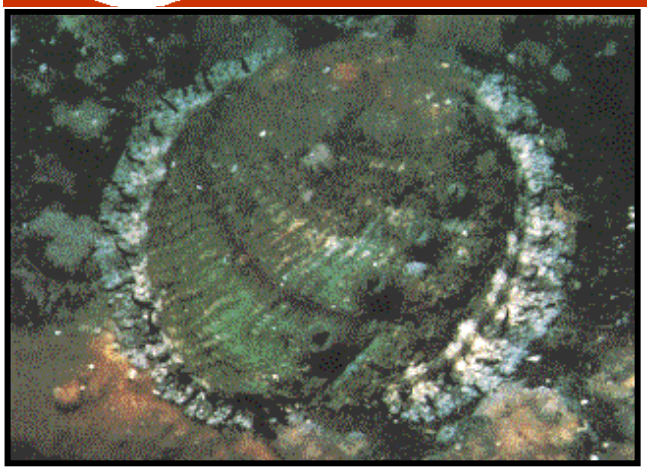


Photo credit: Pete Haaker.

KEY INFORMATION

Areas of Concern
Pt. Conception, CA, to Bahia de Tortuga, Baja California.

Year Identified as "Species of Concern"
2004

Factors for Decline
- Fishing
- Illegal harvest
- Predation
- Competition
- Disease
- Climate Change
- El Niño

Conservation Designations
IUCN: Not Evaluated

Brief Species Description:
Pink abalone ranges from Pt. Conception, California, to Bahia de Santa Maria, Baja California Sur, Mexico (Figure 1). This species occupies sheltered waters at depths between 20 and 118 feet (6 - 36 m). The shell is thick and characterized by strong corrugations and more circular than other US abalones. There are 2 to 4 open respiratory apertures with edges that are strongly elevated above the surface of the shell. The epipodium is a "ruffle" of tissue along the side of the foot (Figure 2). The cephalic (head) and epipodial tentacles are black, but the epipodial fringes are a mottled black and white, with many tubercles on the surface and a lacy edge (California Department of Fish and Game 1986).

Pink abalone have separate sexes and broadcast spawn from March to November. Maturity is reached at about 1.4 inches (35 mm) length or 3 to 4 years. Figure 3 shows the typical life cycle stages. Pink abalone are herbivores, feeding mostly on kelp and drift algae. Lifespan is up to 30 years or more.

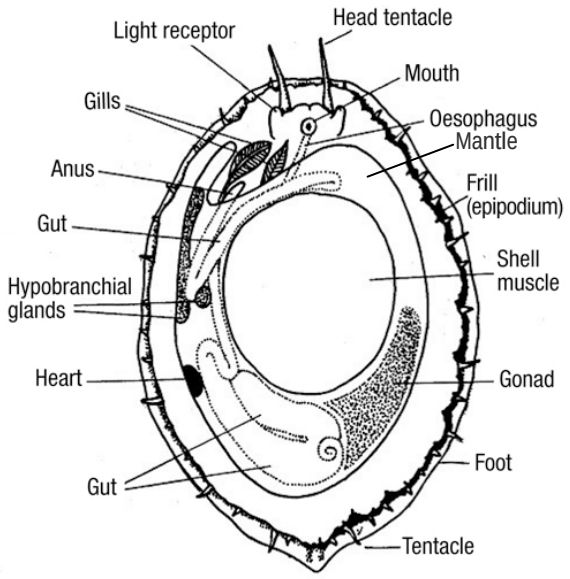


Figure 2. Abalone anatomy.

Figure 1. Map of pink abalone range.

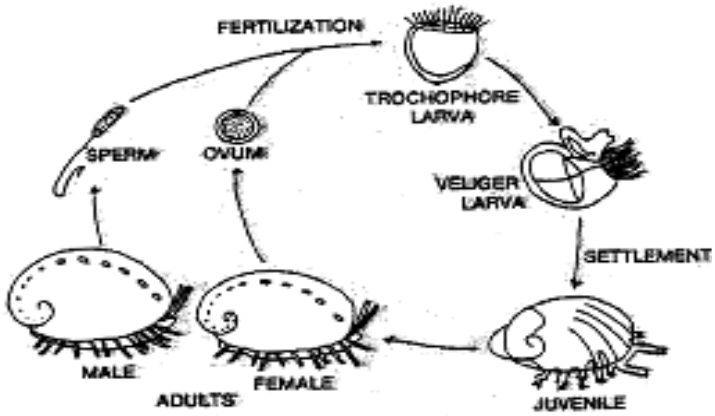


Figure 3. Abalone life cycle.

Rationale for "Species of Concern" Listing:

Demographic and Genetic Diversity Concerns:

Population size has declined in many areas. Peak catch for the pink abalone fishery in California occurred in 1952 (> 1627 metric tons) and by 1990 the catch had declined to 1% of the average catches reported between 1950 and 1970 (Figure 4). In 1996 the California Department of Fish and Game closed the commercial and recreational abalone fisheries in California, but populations continued to decline. In Channel Islands National Park, exploited pink abalone population densities fell from 250 per hectare to less than 14 per hectare in the 1980's, while a population protected in an ecological reserve remained relatively stable at about 400 per hectare (Davis et al. 1992). Information regarding the status of pink abalone in Mexico is scant. Reduced numbers make the species vulnerable to extirpation due to a phenomenon known as the **Allee effect** (Allee et al. 1949). The Allee effect describes a situation whereby a decrease in population size leads to decreases in reproduction and survival of individuals. In the case of pink abalone, this effect is likely due to increasing distance among potentially spawning males and females, leading to reproductive failure, as the population density decreases.

Factors for Decline:

The primary factors contributing to the decline of this species are overharvest, and suspected illegal harvest and trade. Other factors include predation by sea stars, the southern sea otter (*Enhyrda lutris*), fishes and octopi, competition from sea urchins (*Strongylocentrotus* spp.), disease

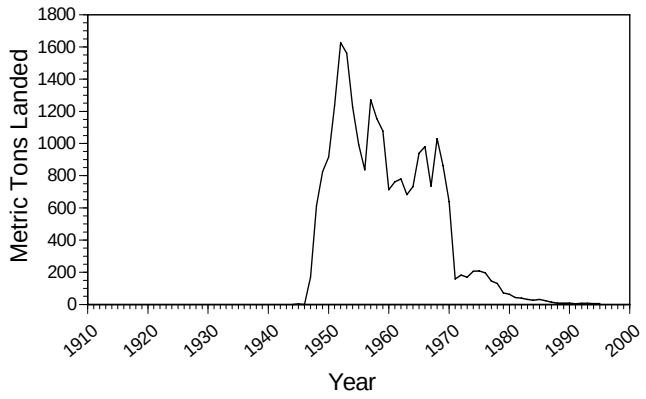
(withering syndrome), climate change, and El Niño events. A commercial fishery for pink abalone is still in place in Mexico and is managed by local cooperatives.

Status Reviews/Research Underway:
None.

Data Deficiencies:
Population monitoring and genetic population structure information are needed.

Existing Protections and Conservation Actions:
Aquaculture programs are being pursued in an attempt to artificially enhance populations. Existing protections include a proposed system of California Marine Protected Areas, commercial and recreational fishery closures, and an **Abalone Recovery Management Plan** was adopted in 2005.

Figure 4. Commercial landings for Pink Abalone (*Haliotis corrugata*) 1944-2000. Data provided by CA Dept of Fish and Game



References:

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Davis, G. E., et al. 1992. Abalone population declines and fishery management in southern California. Pp 237-249 In S. A. Shepherd, M. J. Tegner, and S. A. Guzmán del Próo, (eds). Abalone of the World. Blackwell Scientific Publications, Oxford, England.

Point(s) of contact for questions or further information:
For further information on this Species of Concern, or on the Species of Concern Program in general, please contact NMFS, Office of Protected Resources, 1315 East West Highway, Silver Spring, MD 20910, (301) 713-1401, soc.list@noaa.gov; http://www.nmfs.noaa.gov/pr/species/concern/, or Dr. Melissa Neuman, NOAA Fisheries, Southwest Region, Protected Resources Division,501 W. Ocean Blvd. Suite 4200, Long Beach, California, 90802-4213, (562) 980-4115, Melissa.Neuman@noaa.gov.